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The Effectiveness of Content Study Skills Instruction on the Academic Achievement of Underprepared College Freshman

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THE EFFECTIVENESS OF CONTENT STUDY SKILLS INSTRUCTION ON THE ACADEMIC ACHIEVEMENT OF UNDERPREPARED COLLEGE FRESHMEN

THESIS

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Abstract

The purpose of this study was to examine the effectiveness of content study skills instruction on the achievement of underprepared college students. The academic performance of two groups of underprepared freshmen was compared. The experimental group consisted of 40 students enrolled in an introductory history or psychology course who also participated in the Learning Skills Center support course The control group consisted of a like number of students enrolled in an introductory history or psychology course who did not participate in the support course at the Learning Skills Center. Dependent variables examined were grades earned in the content course and semester grade point average. Mean grade earned in the content course and mean semester grade point average was found for both groups and tested for significance at the .01 level using a *t* test for independent means. The data indicated a significant difference in mean content course grade earned, with the control group displaying superiority. The control group displayed a higher semester grade point average than the experimental group, but the difference was not significant. Successful academic achievement was reflected by high grades attained in the content course by some of

the support students. Because all experimental subjects received satisfactory grades in the support course, transfer of learning may have been an influencing factor. The findings suggest that the experimental and control groups differed in significant unmeasured affective areas.

Table of Contents

List of Tables

Chapter I

Statement of the Problem

The purpose of this study was to examine the effectiveness of study skills instruction on the academic performance of underprepared college students at the State University College of New York at Brockport. The study was designed to compare the performance of an experimental group of underprepared college freshmen who participated in the Learning Skills Center program with a similar control group. The focus was on academic achievement in selected content courses and semester grade point average. Limitations of the study, implications for college academic improvement programs, and the need for further research are discussed.

Need for the Study

Economic, political, and social pressures of the past twenty years have resulted in college admissions boards recruiting and accepting increasing numbers of underprepared college students (Tollefson, 1973). High school graduates who traditionally have been denied a college education because of poor high school credentials and low aptitude test scores are now on college campuses.

These students quickly perceive their academic deficiencies and often find they cannot compete in the classroom with the traditionally accepted student. Odds against their academic success are high (Egerton, 1968).

To meet the needs of the underprepared student, colleges have instituted an array of programs. These include counseling, tutorial aid, remedial courses, and reading and study skills instruction. The major objective of such programs is to elevate the academic performance of their clientele (Pauk, 1965).

The need for academic improvement program evaluation has long been apparent. Nearly thirty years ago Robinson (1950) advised:

> Academic performance is clearly the sine qua non for the validation of remedial courses, particularly in liberal arts curricula where by far the largest portion of scholastic agenda comprises reading or related activities. And in the final analysis, remedial instruction must necessarily stand or fall on the basis of this single criterion, however ingeniously alternative standards of comparison are defended. (p. 85)

In spite of Robinson's early call for program evaluation, little has been learned concerning which aspects of a program contribute to academic success. The research aimed at academic improvement programs is inconclusive. Reported studies often suffer from limitations, have been inadequately described, and inadequately validated.

Few studies have evaluated remedial study skills programs and few programs have directly involved specific content courses.

In recent years some studies have demonstrated a significant positive relationship between participation in an academic improvement program and academic achievement. Other studies have shown no positive relationship.

Pauk (1965)conducted two studies which indicated a significant relationship between reading-study skills instruction and academic achievement. His experimental group of students received two fifty-minute study skills lectures a week for a period of three weeks. A matched control group received no study skills instruction. The grade point average (GPA) increase from first to second semester for the experimental group was significantly higher than that of the control group. In a similar seven week program an experimental group participated in both reading and study skills instruction twice a week. The mean GPA increase from first to second semester was significantly higher than that of a control group which received no reading and study skills instruction. Dalton, Gleissman, Guthrie, and Ress (1966) investigated the effects of a reading improvement course using a control group format and reported positive significant

results. There was no relationship found between participation in a study skills course and academic achievement. Dudley (1978)reported statistically significant superiority of an experimental group in a required English composition course, in grade point average for two of four semesters, and in college retention over four semesters. The experimental group successfully completed a one semester remedial writing course in the Learning Skills Center.

Feinberg, Ling, and Rosenbeck (1961) reported no significant effects of a mandatory study skills course for entering freshmen. The experimental group participated in a study skills lecture and lab program for one semester. There was no significant difference found between the experimental group's mean GPA and the control group's mean GPA. Losak (1972) investigated a remedial reading-writing program for underprepared students and found no difference in GPA and no improvement in a selected English course, a social science course, or a humanities course. He found no increased retention in matched experimental and control groups.

The evidence seems contradictory. The need for further investigation, particularly of the effect of reading-study skills instruction on content course work is necessary. Pauk (1965) suggested:

> The teaching of a study skills course as a separate course, or the injecting of study skills in a course designed for rapid reading might help reading improvement programs to achieve the goal for which they were set up, that is, to produce improvement in the scholastic standing of the students. (p. 182)

Questions to be Answered

This writer has examined the relationship between content study skills instruction and academic achievement of underprepared students.

This study was designed to answer the following questions:

1. Is there a significant difference in grades received in a content course between underprepared students who satisfactorily completed a support class at the Learning Skills Center and a control group of underprepared students who were unsuccessful or who did not enroll in the support class?
2. Is there a significant difference in semester grade point average earned by underprepared students who satisfactorily completed a support class at the Learning Skills Center and a control group of underprepared students who were unsuccessful or who did not enroll in the support class?

Definition of Terms

The terms which require definitions are used consistently throughout the paper and are defined as follows:

1. Academic performance is indicated by course grades and grade point average.
2. A support course is a developmental course offering supplemental skills instruction within a content area, whose purpose is to elevate the academic performance in the content course.
3. An underprepared college student is that student who lacks the traditional high school credentials and personal experience which indicate academic success. His weak academic skills make college survival difficult.

Limitations

The results of this study are affected by some limitations. Consideration by the reader must be given to the fact that more than one content professor was involved. The psychology class, titled Introduction to Psychology, consisted of students who were taught in two different class sessions. Two professors instructed the course. It is reasonable to believe an A earned in a

course by a student may or may not have been earned if the student had enrolled in a class taught by the other professor. The same consideration must be acknowledged when considering the grade earned in the history class. Some history students enrolled in World History Before 1500. Others enrolled in U.S. History Before 1877. These courses were taught by two different professors.

In this study no comparison has been made of grades earned by psychology students and history students. It must be understood that evaluation of psychology students' content course work was based on objective tests. Evaluation of history students' content course work was based on subjective essay tests. However, this kind of comparison was not the concern of the writer. The concept of study skills instruction and its effect on content course achievement is the prime concern in answering the questions posed in the study.

The study skills instruction was the responsibility of more than one instructor in the Learning Skills Center. Skills taught were similar, however, and are applicable to any content course work. Needs of the student did help the instructors in planning any individual instruction.

Another limiting factor is class attendance. No attendance policy in the content course or in the study

skills support class is strictly enforced at the college.

An additional limitation is the duration of the treatment. One semester of remediation may not be sufficient to result in measureable academic gains.

Summary

This study was an attempt to evaluate the effectiveness on academic achievement of a content study skills course offered to underprepared college freshmen. Treatment and control groups were formed. Dependent variables included grades earned in a content course and grade point average. The findings suffer from limitations but do lend themselves to further academic improvement program evaluation. Further study and evaluation is necessary to best help the underprepared student survive his early post-secondary career.

Chapter II

Review of the Literature

This research study was designed to investigate the concept of content study skills instruction and its effects on the academic performance of underprepared college freshmen. The focus was on academic achievement in selected content courses and semester cumulative index. Much has been written about the underprepared student and the various post-secondary programs operating to meet that student's needs. This chapter turns to the literature to examine the history and justification of reading and basic skills classes at the college level. The definitions offered to describe the underprepared student are given. The developmental and social factors which are thought to affect college success are reviewed. Related descriptive studies of basic skills courses and of skills programs in the content areas are reported. The need for further consideration and study is discussed.

History and Justification of Post-Secondary Basic Skills Education

A chronological approach to the development of skills education, an historical view of the trends in diagnostic and remedial measures facilitated, and three philosophical

views of access to higher education which have affected college programs since the 1750's are included in the history and justification of college basic skills education.

Chronologic Development of Skills Education

Higher education in the United States has been involved with basic skills education for nearly one hundred years. The first skills course recorded was offered at Wellesley College in 1894 (Cross, 1976). Remediation in basic "academic deficiencies" was available at this four year women's college in Massachusetts. In an early evaluative study Moore (1915) reported what has been recognized as the "earliest sustained attempt" to formally help college students with their reading skills. Upon completion of the program offered to Harvard students, Moore gave no evaluative conclusions based on data, but his general observation was that if colleges designed programs to help students improve their study strategies, then colleges would be more effective institutions of learning. In his dissertation, Leedy (1958) referred to similar reports of the 1920's from the University of Chicago, the University of Illinois, Hamline University, and Columbia University. Reading instruction was offered as part of how-to-study programs and usually given during orientation sessions.

These reports did not indicate that the participating students were poor readers.

In 1929 the University of Buffalo and Syracuse University each made available reports of programs designed for students with poor grades. The Buffalo program director offered a course based on study skills (Jones, 1929). The Syracuse program consisted of extensive drill and practice in silent reading (Carroll and Jacobs, 1929). The directors of their respective programs felt that the students who needed the help were "kept" from failure and were permitted to achieve as well as their more able classmates.

In 1930 Parr published the first survey of what was being done in college reading programs. He received responses from seven colleges. Instructors said they had "evidence" which made them believe their students had improved reading skills and were doing better college work as a result of the programs conducted.

Quantitative data was not then available because of the lack of standardized reading tests appropriate for the college level, lack of study skills inventories, and unrefined research techniques. Typical evaluation used was noting decreased reading time, consumption of materials, and the ability of students to frame questions

based on reading material (Lowe, 1971).

The late 1920's gave rise to the development and use of reading tests, tachistoscopes, eye cameras, and workbooks. Eurick and Haggartey published the first two standardized reading tests for college students. Eurick (1929) designed A Speed of Reading Test for College Students. Together, the test makers are responsible for A Test of Reading Comprehension (Haggartey and Eurick, 1929).

From 1930 to 1939 the quantity of evaluative, descriptive, and predictive studies was ever increasing. Because of the many evaluative measures being written and made available, colleges were testing the reading abilities of entering freshmen and implementing reading-study programs to best serve those students. Strang (1937) conducted a survey similar to Parr's and found 82 of 152 colleges contacted listed reading programs.

By 1941 F. P. Robinson (1961) had first published and later revised Effective Study. Triggs (1943) wrote a teacher's manual, Remedial Reading Difficulties at the College Level. The end of World War II brought increasing numbers of students through college doors. With their arrival came increased concern in their reading abilities. College reading became a popular research area (Lowe, 1971).

During the 1950's Evelyn Woods Reading Dynamics, SRA Kits, reading workbooks for college students, the programmed learning concept, the controlled reader, and another increase in student population all had their impact on reading-study programs (Lowe, 1971).

The last two decades have shown continued interest in implementation of programs and in the students who participate in them. Grant and Hoeber (1978) reported that skills courses are an established part of the programs of junior and community colleges and universities. The literature consists of many surveys, program description, and evaluations. Local, state, and national conferences concerning the underprepared college student have been held. The Fund for the Improvement of Postsecondary Education (FIPSE) National Project II sponsored such a conference in December of 1976. Chicago State University sponsored the Remedial-Developmental Studies in Postsecondary Institutions Conference in March, 1977. The Learning Skills Center at the State University College of New York at Brockport held its second annual state wide Developmental/Remedial Education Symposium in April, 1979.

Trends in Diagnostic and Remedial Measures

An historical trend in diagnostic and remedial measures employed to improve poor academic performance can be

detected (Cross, 1976). Before the 1930's educators did not label the academically weak student who came from a prestigious family background inept and did not blame his deficient skills on inefficient previous schooling. He was diagnosed as an immature student who lacked discipline and organized study habits. How-to-study courses were often available on a non-credit basis in which time-management, note-taking techniques, study methods, and test-taking skills were taught. A typical course of this era, offered at Stanford University, was described by Sharp (1943).

By the 1940's remedial reading projects were added to or replaced how-to-study classes (Triggs, 1942). Inadequate development of basic skills in comprehension, vocabulary, and reading rate was thought to contribute to poor academic performance. Treatment consisted largely of practice reading, with little statistical evaluation (Charters, 1941).

Another trend in remediation was characterized by the facet of identifying which students could most benefit from remediation. Academically disabled students were considered to be either "low ability students" or "underachievers." Most interest was for the underachiever who demonstrated ability on achievement tests but performed

poorly in class. After World War II the purpose of remediation was to encourage the underachiever to use his talent more effectively, while the low ability student was considered to be undeserving. In a period when college populations were high Pittman (1960) wrote "A college can hardly do very much for students of low academic ability."

The latest trend in remediation has been based on a concern with sociopsychological and sociocultural factors. Cross (1976) called this a more sophisticated approach. The trend is toward a corrective program that deals with social, emotional, and cognitive components of student development.

Philosophical Views Affecting Skills Programs

The history of basic skills education at the college level is closely linked with the changing philosophies of who should attend college. Cross (1971) has described the influences of three major philosophies, the aristocratic philosophy, the meritocratic philosophy, and the most recent, the egalitarian philosophy. Each has affected the number of college students, the kinds of students, and the programs offered to the students admitted to colleges.

The aristocratic philosophy permitted the elite

segment of society to attend college. Money, social status, and family provided access to higher education, while academic ability did not. The purpose of a college education was to maintain one's status is society.

A revolt against this philosophy arose with the institution of land grant colleges. In 1867 the Land Grant Act made higher education available to larger numbers of American people. Admission was based on academic merit shown by "academic-aptitude" test scores. After World War II the GI Bill of Rights further broke social and economic barriers to a college education. The purpose of a college education changed. Students expected to be prepared for a career. The "meritocracy" demanded a wider range of courses than the "aristocracy" had offered. In 1954 the country stressed the need to use well "its brightest people whether they came from farm or city, from the slum section or the country club area, regardless of color or religion or economic differences but not regardless of ability" (Wolfle, 1954, p. 6).

During the 1970's there has been a further move that higher education be more democratic. Cross called this move the "egalitarian philosophy." This philosophy maintains that anyone who wants to participate in higher education should have it made available, regardless of social, economic, or academic achievement.

A new sector of society has access to higher education through the egalitarian, open-admissions schools. The traditional curricula are being altered to meet the learning needs of this sector. Skills courses, typically including reading, writing, and mathematics are assigned to remove the academic deficiencies displayed (Monteith, 1978). Monteith suggests that a new concept in basic skills programs is evolving. In her review of "adjunct courses" she suggests the trend is moving away from skills courses to "content/subject courses" at a basic level.

The changing United States philosophy of who should go to college has resulted in changing admissions policies, changing recruitment policies, and a documented lowering of academic performances of high school graduates now entering colleges. In 1975 the College Examination Board reported a ten point decline in the verbal score and an eight point decline in the mathematics score on the American College Test (ACT). This was the largest yearly decline since scores began falling in 1963 (Grant and Hoeber, 1978). In her research Cross has designated one distinguishing characteristic of the students pursuing a post-secondary education in the 1970's. That characteristic is a low level of academic achievement on traditional measures and within traditional curricula.

Jonathan Fife, Director of the ERIC Clearing House, states in his foreword to the research report by Grant and Hoeber that the population of students requiring training in reading, writing, and mathematics skills is much larger than anticipated. The very presence of underprepared students within post-secondary education is justification for the existence of study skills programs at the college level.

Definition of an Underprepared Student

If the skills programs are best justified by the existence of the population of students participating in need of them, the programs will be most effective when the characteristics of the underprepared students are known. The students in need have been assigned many labels: disadvantaged, remedial, developmental, high-risk, marginal, nontraditional, new, and underprepared.

According to the Department of Health, Education, and Welfare, the underprepared student is culturally, economically, and socially handicapped (Kohrs, 1969). The U. S. Department of Commerce, in a published report cited by E. W. Gordon (1976) states the underprepared student:

> has not acquired the verbal and mathematical, and full range of cognitive skills required for collegiate level work. Generally, he is a student whose grades fall in the bottom half of his high school class,

> who has not earned a college preparatory diploma, and is assigned to a high school which has a poor record for student achievement, or who has been tracked into a general, commercial or vocational high school program . . . Such a student will generally rank low on such traditional measures of collegiate admissions as SAT board scores, high school class average standing . . . (p. 4)

Friedman and Thompson (1971) have added to this definition. In an Equal Opportunity Grant report they said the underprepared student is often admitted to college by special programs. Two thirds are from the lower ranking half of their high school class, have not been in a college preparatory program of study in high school, and have low ACT scores. Three fourths are from minority groups and sixty per cent receive some type of support service.

Mulka and Sheerin (1974) noted that deficiencies in reading, writing, and mathematics describe this student. Klingelhofer and Hollander (1973) pointed out that these students come from a variety of sociocultural groups and have records of low achievement in high school.

In the preface to her book, Beyond the Open Door (1971), Cross categorizes underprepared students as those scoring in the lowest third of the sample on tests of academic achievement. Traditional students score in the upper third.

The sociocultural factor, indicated by income,

occupation, and education of the student's family, and which Cross(1976) has counted as a cause of minimal academic achievement, takes an important position in characterizing the underprepared student. Mulka and Sheerin stated that a low sociocultural rank limits the student's opportunity for admission, successful achievement, and retention in higher education. These students have typically been the victims of an inadequate public school system, which accounts in part for their distrust of formal education (E. W. Gordon, 1975). The result is a poor self image, feelings of incompetence, and motivational and psychological blocks to learning (Grant and Hoeber, 1978; Mulka and Sheerin, 1974).

Grant and Hoeber warned that in formulating a description of the underprepared student, it must be recognized that more research has been done on the minority student than on any other underprepared student. Yet in 61% of the junior colleges Cross(1971) surveyed, less than 25% of the students in skills programs were of minority groups. The National Institute of Education has found that the underprepared student is typically male and Caucasian (Hodgkinson, 1975).

Developmental Factors Related to College Learning

Learning is defined as a "relatively stable tendency to react" (Adams, 1976, p. 6). To better understand the college learner, educational theorists and researchers have examined factors which affect academic development and which are related to college learning and contribute to college success.

Theories of development take different approaches but do overlap. Cross (1976) synthesized points of agreement into six propositions:

1. Development is a life long process . . .
2. Development involves the total being, integrating cognitive and affective learning.
3. Development involves active internal direction . . .
4. Development is stimulated when the individual reacts with an appropriately challenging environment.
5. The phenomena of developmental growth can be submitted to scientific study.
6. Educational programs and interventions can be designed to make an impact on the rate, level, and direction of development. (p. 167)

Three approaches applicable to student development follow.

Abraham Maslow's theory is humanistic and grows from the premise that man is basically good, and that when given freedom and responsibility, will choose the positive alternative if the environment is right. If the environment is "warm, caring, supporting, challenging, and stimulating" the individual will move toward maximum

potential.

The goal of education is to help the individual "become what he can be, to realize his potential for perfecting to develop a repertoire of behavior that enables him to meet any challenge his environment provides" (Grant, 1972, p. 195) and to "provide a learning climate in which the greatest possible development of potential and fulfillment can take place" (O'Banion, Thurston, and Gulden, 1972, p. 200).

Maslow's theory of development is based on a hierarchy of needs. As the first needs are satisfied the next on the hierarchy becomes strong. The need for "self-actualization" exists at the highest level. The desire to know is a vital part of functioning at the level of self-actualization. If the individual is not cognitively industrious, he becomes self hating, bored, and depressed.

Maslow (1967) has listed eight awarenesses and behaviors which lead to self-actualization. Cross (1976) has summarized them:

1. "Self-actualization means experiencing fully, vividly, selflessly, with full concentration and total absorption."
2. Life is a process of choices - choices toward safety, defensiveness, or fear; and choices toward growth.
3. We must assume that there is a self to be actualized - that people can respond as they

really are rather than as others think they should be.

4. An assumption of responsibility for self-appraisal is a move toward self-actualization.
5. "One cannot choose wisely for a life unless he dares to listen to himself . . . each moment in life."
6. Self-actualization is a continuous process toward maximizing one's potential.
7. Conditions need to be built for maximizing peak experiences.
8. Repression is not a good method of problem solving. One needs to be open with oneself and to give up defenses even if the process is painful. (p. 180-181)

The goal of education for Maslow is self-actualization. He does not believe an instructor can teach an individual a new idea, but believes individuals make themselves into something through "intrinsic learning." They learn to be a particular human being. Young people particularly can learn this and have the potential for self-actualization. They are "making choices from moment to moment, of going forward or retrogressing, moving away from or moving toward self-actualization" (Maslow, 1967, p. 281).

Cognitive developmental approaches come from the thinking of W. G. Perry and Jean Piaget. Each of their models of development is based on a hierarchial model in which there is an order of increasingly advanced stages of cognitive structures.

Perry (1970) has concentrated his studies on high school and college learners. After observing Harvard

students through the 1950's and 1960's and derived a model of nine developmental levels.

1. The student sees the world in polar terms of we-right-good vs. other-wrong-bad. Right Answers for everything exist in the Absolute, known to Authority, whose role is to mediate them. Knowledge and goodness are perceived as quantitative accretions of discrete rightnesses to be collected by hard work and obedience.
2. The student perceives diversity of opinion, and uncertainty, and accounts for them as unwarranted confusion in poorly qualified Authorities or as mere exercises set by Authority 'so we can learn to find The Answer for ourselves.'
3. The student accepts diversity and uncertainty as legitimate but still temporary in areas where Authority 'hasn't found The Answer yet.' He supposes Authority grades him in these areas on 'good expression' but remains puzzled as to standards.
4. (a) The student perceives legitimate uncertainty to be extensive and raises it to the status of an unstructured epistemological realm of its own in which 'anyone has a right to his opinion,' a realm . . . where right-wrong still prevails, or (b) the student discovers qualitative contextual relativistic reasoning as a special case of 'what They want' within Authority's realm.
5. The student perceives all knowledge and values as contextual and relativistic and subordinates dualistic right-wrong functions to the status of a special case, in context.
6. The student apprehends the necessity of orienting himself in a relativistic world through some form of personal Commitment.
7. The student makes an initial Commitment in some area.
8. The student experiences the implications of Commitment, and explores . . . responsibility.
9. The student experiences the affirmation of identity among multiple responsibilities and realizes Commitment as an ongoing, unfolding activity through which he expresses his life style. (pp. 9-10)

In Perry's scheme, development moves from perceiving the world simply to more complexly, and from segregation

to integration. The immature individual sees the world in an either-or, good-bad framework. The undeveloped student looks to authority for answers. As he learns authority disagrees, he moves to resolve differences and seeks answers for himself. He identifies factors important to himself. Perry states that he found most entering college students operate at the third, fourth, or fifth levels and graduate at level six, seven, or eight. Few of the Harvard students he worked with achieved level nine. Freshmen made simple, moralistic educational decisions. Seniors were more open and able to cope with complexity and uncertainty. They were more autonomous and integrated beings with a more clear awareness and control of self.

The cognitive theory of Jean Piaget has had a powerful influence on Perry's work. Piaget, writing with Inhelder, (1969) has named and defined four factors which affect cognitive development (Campbell, 1976). They are maturation, experience, social interaction and transmission, and self regulation. An explanation of each of these follows.

Maturation creates conditions for learning, and is necessary for some behaviors. Growth of the nervous and endocrine systems is particularly necessary for certain

behavior patterns. Maturing behaviors are reinforced by their use and by the levels of individual experience.

The experience factor includes physical and logico-mathematical experience. Physical experience includes that acquired from acting on an object to learn from its properties. Knowledge is taken from the object. Logico-mathematical experience precipitates from acting on the object to learn from the result of coordinating the action. Knowledge is derived from the action of the individual, not from the object itself.

Social integration and transmission, or socialization, defines those patterns of behavior to which an individual contributes and from which he receives. An interdependence exists between operation and cooperation. Social transmission, such as might occur in a classroom lecture, is effective only when actively assimilated by the individual. Efficient operatory structures, such as curiosity and will, are presupposed and necessary.

Self-regulation is composed of a series of compensations on the part of the individual in response to external disturbance. An adjustment that is both retroactive and anticipatory creates a permanent system of compensations. Self-regulation plays an important role in development of both the affective and cognitive lives. This factor

reconciles the roles of maturation, experience, and socialization. Self-regulation protects the individual from being overburdened with new information and from too quickly accommodating a changing environment.

Cognitive development appears in a sequence of three major stages, the pre-operational stage, the concrete operational stage, and the formal operational stage (Pulaski, 1970). Each stage is characterized by an overall structure demonstrated by particular behavior patterns which can be explained in terms of the structure. Through accommodation and assimilation the previous structures are subordinated to newly developed structures of the oncoming stage. Piaget maintains that to assimilate what is taught, the individual needs the "structures which he builds through his own activity." As the individual asserts self-regulation and expresses the formal cognitive structures, he develops further.

The formal operation stage is most appropriate in studying the college learner. Piaget says it emerges at approximately age eleven and operates through adulthood. It is characterized by formal thinking and the logic of propositions. The individual operating at this level is able to reason from an hypothesis to all conclusions, both concrete and theoretical. The individual has the

structures for thinking about thoughts. These formal thinking structures are not innate, but are forms of self-regulation arrived at by the individual and depend more on social factors than maturational factors. As the stage progresses, the individual begins to assume adult roles.

Piaget and Inhelder (1958) assigned several characteristics to the adolescent who is assuming adult roles (Campbell, 1976). The adolescent thinks of himself as equal to adults and feels able to judge them. He is a maturing individual who is thinking of the future, his place and work in society. To his daily activities, the adolescent adds a plan of later adult activity. The adolescent often thinks of changing society to resolve the many conflicts he faces.

Piaget suggested the alienated student, the rebel, or the drop-out may need work and adult responsibilities. He wrote "True adaptation to society comes automatically when the adolescent reformer attempts to put his ideas to work . . . One should not be disquieted by the extravagance and disequilibrium of the better part of adolescence" (Piaget, 1967, pp. 68-69). Work restores equilibrium and "marks the advent of adulthood."

The developmental positions of Maslow, Perry, and Piaget suggest the responsibility of educators is to

influence developmental structures and not capabilities or skills. The educational environment must be stimulating and sometimes uncomfortable for the individual to be able to move on to a higher stage of development. Education must motivate and challenge the student to seek new understanding. The ability to develop that understanding is a birthright which educators can encourage or stifle.

Social Factors Related to College Success

Previous educational and home experiences have a pervasive effect on college success. Different experiences shape students who acquire different motivations, achievements, attitudes, and values which affect learning. Students growing up in sociocultural environments which are antagonistic to learning are apt to have academic difficulties demonstrated by a lack of motivation, passivity in learning situations, poor study habits, and minimal basic skill development (Cross, 1976).

The Atkinson-Feather (1966) theory of achievement motivation helps explain the learning behaviors of achievement-oriented and fear-threatened students. The theory is based on the premise that learning involves risks to the ego. Mulka and Sheerin (1974) maintain that a poor ego limits the opportunity for achievement even more than a student's minimal sociocultural background.

The achievement-oriented student is self confident and willing to take risks. He is concerned with how successfully he can achieve. He is the traditional college student and works hardest at a task which offers a 50-50 chance of success. A simple task is not motivating because success is assured and not self rewarding. A task in which success is extremely unlikely is avoided because the hope for self reward is minimal. A task whose outcome is uncertain is challenging because previous experiences permit the student to predict his success in an unfamiliar endeavor. The achievement-oriented student has learned that effort and success are related.

The fear-threatened student lacks confidence and is concerned with avoiding failure and protecting his ego. He operates in fear and has learned to use methods of avoiding failure, methods which tend to impede learning. He has learned that if he cannot experience success, the "next best bet is to have total failure" (Holt, 1970, p. 85). His previous academic performance has led him to label himself a failure. His approach to learning is different from that of the achievement-motivated student.

Two kinds of tasks are motivating to the fear-threatened student. He will accept a simple task where the chance of success is 100%. A lesson or learning task

which is known will be repeated by him without moving on to new, threatening lessons. This student will also accept a task of such extreme difficulty that the chance of failure is 100%. Expected failure is not threatening. The task in which the outcome is not certain is the most avoided task. Accepting such a task is to risk failure.

One method of reacting to the threat of failure is to hold unrealistic aspirations. For example, admission to and participation in a medical school program is not threatening to the fear-threatened student because he has no expectation for success. Another way of reacting to the threat of failure is to operate incompetently in a learning situation. Demands and expectations of both self and others are then minimal. When one expects to fail, there is no disappointment. A third way of reacting to threats of failing is to assume a passive approach to learning situations. If no active effort is made, failure is avoided. The student has learned from previous experience that effort and failure are related.

Responses to a 1970 questionnaire showed that remedial program directors perceived the major learning obstacle for low achieving students was "lack of effort." Other obstacles, in rank order, were poor home background,

deficient elementary and secondary education, fear of failure, greater interest in non-academic activities than academic activities, time and energy for studies limited by the necessity of a job, and low intelligence (Cross, 1971).

The relationships among socio-economic status (SES), college attendance, and academic ability have been examined by longitudinal research projects conducted during the 1960's. Cross has compared the data and concluded that they indicate four impediments to successful higher education, low SES, low tested academic aptitude, female sex, and minority ethnic status. One study particularly documents the relationship of SES and academic ability. Project Talent (Flanagan, 1964) data were used to classify high school seniors by SES and academic ability. It showed that 83% of the low SES group scored low on aptitude tests. Seventy-nine per cent of the high SES group scored high on the aptitude test.

Research indicates that the underprepared student has an orientation toward learning which is different from that of traditional students. Past experiences at home and in school have shaped his attitudes about learning, about life, and about himself. There is

debate among educators now over whether the emphasis should be to change the underprepared students to fit the existing college programs, or to further modify the programs.

Effectiveness of Reading and Study Skills Courses and Programs

Evaluative studies of reading-study skills programs have been reported since the 1920's. Lowe (1971) has described one of the earliest conducted by Parr in 1929. Entwistle (1960) summarized reports of programs existing between the middle 1930's and late 1950's. She concluded that some academic improvement, based nearly exclusively on GPA, seemed to be the rule, but qualified her statement, recognizing that negative reports were probably not published. Santeusanio (1974) reviewed twenty-four studies and concluded that enrolling in a program "does not result in students attaining a higher GPA" (p. 267). Monteith (1978) has gathered descriptive and evaluative information resulting from programs offering not the commonly included reading and writing components, but from programs offering basic content study skills courses. She says the resulting data show these courses appear to meet a need of underprepared college students but further evaluation is required.

Difficulty of Program Evaluation

Before implications and conclusions can be drawn from documented evaluative studies, various difficulties in evaluation of skills programs must be recognized. Errors in methodological design and use of statistics impose limitations on generalizations that can be drawn from the studies (Reed, 1956). A serious limitation Reed acknowledged was failure to use matched experimental and control groups, particularly on the basis of motivation. H. A. Robinson (1950) criticized reading-study program evaluation for failure to control for motivation. "Initial attitudes and motivations are entirely disregarded" (p. 88), a neglect which is remarkable when it is recognized that many remedial courses are participated in by volunteers, or carry partial or no college credit. Robinson described his reading-study skills program in which he controlled for motivation. His control group consisted of volunteering students who for various reasons were unable to be included in the class. Positive academic differences for the experimental group were established at the .10 level of confidence. Robinson concluded that participation in the program was significantly related to higher academic achievement.

Averch, Carroll, Donaldson, Kiesling, and Pineus (1972)

listed four limitations of educational research:

1. Data are unrefined.
2. Results are determined largely by congitive achievement.
3. Few studies have adequate controls.
4. There is little concern for cost implications.

Grant and Hoeber (1978) also recognize problems which make basic skill program evaluation difficult:

1. The ethics of creating a control group and purposely denying them the resulting positive effects an experimental group is believed to acquire.
2. Quick turnover of program staff and frequent program alteration.
3. Lack of clear objectives and measureable goals.
4. Difficulty of isolating and testing single variables.

When programs have been quickly and inefficiently designed, lack clear objectives, and data is inadequately collected, the student is generally viewed as the failure. S. Gordon (1970) disputed this when he asserted that remedial education is lacking when its concentration is on "the student's failure to learn rather than the school's failure to instruct" (p. 351). There is an ongoing need to

discover effective and efficient programs which will meet the needs of the underprepared student.

Reading-Writing-Study Courses

Components of skills programs have commonly been reading, writing, and study skills. An examination of the effectiveness of representative programs shows inconclusive results.

Santeusanio's report included descriptive evaluative data of twenty-four programs in operation during the 1960's and 1970's. Twelve of them were deemed successful by the researchers responsible for the programs. Santeusanio critically maintained each of those twelve suffered from failure to adequately control for motivation or were poorly designed or reported.

Gunderson (1960) reported that students who volunteered to participate in a developmental reading class at Concordia College scored higher course grades in English, religion, and chemistry classes than a group of students who did not participate.

Dalton et al. (1966) reported significantly higher GPAs for volunteers who enrolled in a reading class than either a study skills group or a control group for two semesters following the reading instruction.

Lesnik (1970) learned that students who voluntarily attended individualized study skills counseling meetings

achieved significantly higher grades than a control group at the end of their freshmen and senior years. The experimental group also earned higher GPAs for the four college years.

The twelve other research studies surveyed by Santeusanio indicated there was no significant relationship between GPA and participation in the described program. Six of these programs were of a volunteer nature and still showed students did not achieve higher GPAs.

Sosebee (1963) administered a four-year longitudinal study of Indiana University students matched on I.Q. and reading test scores. An experimental group of one hundred volunteers worked in the learning center to improve reading and study skills, but no significant difference in academic achievement was found for any of eight semesters when compared to a group of one hundred non-volunteers.

King, Dellande, and Walter (1969) collected statistical data of an experimental group of students matched with a control group on year in college, selected college major, scholastic achievement, and sex. Post-semester GPAs for the volunteer experimental group were not significatly different from pre-semester GPAs

of the experimental or control group.

Two studies were conducted by Bahe (1969). A sample of freshmen with high learning potential, but who were underachievers, volunteered to enter the skills courses in both experiments. They were matched on high school rank, ACT scores, and freshman GPAs. In 1965 the first experiment consisted of a two-semester follow up. The second experiment, conducted in 1966, was followed up for one semester. In both experiments academic performance of the experimental group was found to be inferior to that of the control group.

From Santeusanio's review it seems practical to conclude that the effectiveness of reading-study skills instruction is not well established if effectiveness depends on academic achievement. However, there are recent reports offered by researchers that do demonstrate a significant positive relationship between participation in a basic reading-study skills program and student performance. Participants in Dudley's and McPhail's research were required to enroll in skills courses so the motivation factor was controlled for.

Dudley (1978) found statistically significant academic improvement of an experimental group in a required English composition course, for two of four

semesters in GPA, and in college retention for four semesters. An upward trend in GPA over four semesters was detected. The non-volunteer experimental group successfully completed a one semester remedial writing course.

McPhail (1978) has conducted and evaluated three summer reading-study skills programs he offered at Hahnemann Medical College for two years, at the Pennsylvania College of Podiatric Medicine for each of three summers, and at the University of Pennsylvania School of Veterinary Medicine for summers. The reading-study skills courses were an integrated part of the curriculum of the summer recruitment programs at the three schools. Course work in each program included the basic sciences and reading-study skills instruction appropriate to the science curriculum.

Comparisons of pretest/posttest performance on the Brown-Holtzman Survey of Study Habits and Attitudes and the Survey of Reading/Study Efficiency showed significant positive results for all three programs each year they were conducted. A follow-up study is planned to learn the relationship of reading/study skills instruction to academic achievement.

Content Study Skills Programs

As instructors have acquired experience and achieved differing successes with underprepared students, a change in basic skills curriculum is occuring (Monteith, 1978). Content study skills instruction is being offered at a basic level in what has been termed a support or "adjunct" course. Instructors at the Learning Skills Center at Brockport have moved with this trend as reports from other colleges indicate the same change in approach to study skills instruction. The rationale is that underprepared students are likely to not have the necessary science, social studies, or other content concepts and skills basic to entry level college courses.

Descriptions and evaluations of support courses to aid underprepared students make the transition to college level work and so increase achievement are being made available. In 1976 Sherman presented a paper to the College Reading Association describing a program at Norwalk Community College in Connecticut. One course which combines reading and writing fundamentals with the introductory psychology course is available to underprepared students. It is based on the premises that academic faculty can learn to effectively instruct underprepared students, and that reading and writing can be taught within a content course.

Tomlinson and Tomlinson (1975) described a reading and study skills support course organized to help students increase achievement in biology. Focus was on methods and materials used in the content course and on lecture review. The goal was to build skill foundations for transfer to independent science reading. Students volunteered to attend the support class 3 days a week for 8 weeks on a no credit basis.

An evaluation of the effectiveness of the support course concept conducted during the 1974-75 school year indicated significant achievement in the content course by those students who regularly attended the support sessions. Students were found to have increased their average grades from seven points below that of the total class on the midterm given shortly after the support class began, to slightly above the class average at the end of one semester. Five per cent of the support course students dropped out of the freshman biology course, while 31% of the control group dropped out.

In the fall of 1975 a second evaluation was conducted. Students who volunteered and were subsequently enrolled in the support course scored significantly higher on the biology course midterm than a control group of students who volunteered, but who for various reasons could not be included in the support course.

The evidence from both studies indicates that the support course integrating the teaching of reading and study skills with content material may have significantly increased freshman academic achievement.

A remedial course in freshmen chemistry at Western Kentucky University was described by N. Hunter (1974). Its goal was to ready underprepared students for the introductory chemistry course by improving students' deficient mathematics skills, inefficient high school chemistry preparation, limited reading abilities, and poor self concepts. Previous procedures for increasing a student's achievement in chemistry by adding additional college mathematics courses or requiring repeated enrollment in the chemistry a second semester were not effective.

The Toledo Exam was used to identify students lacking preparation for the chemistry course and also was used as the support course posttest. It was determined that those students scoring 40 or lower on the exam were likely to receive a D, E, or F grade in the chemistry course. Indication was that 25 of 37 students who scored 40 or less should have received a D or lower grade in chemistry. There were only five support students who scored a D or lower grade. The chance of achieving an A, B, or C chemistry grade for those scoring above 40 on the

Toledo Exam posttest was increased from 75% to 87.5%. It appears that the remedial course was effective for the majority of students.

A concern for transfer of study skills to content course work resulted in a curriculum model which integrated a freshman biology course with the study skills course at Metropolitan State College in Denver (Poppino and Cohen, 1979). The biology professors were concerned with improving the confidence and academic success of those enrolled students with minimum science backgrounds. Regular communication existed between the two departments fostering a study skills curriculum which complemented the content tasks. Results indicated both cognitive and affective gains. All students participating increased their confidence as measured by an inventory. Academic achievement increased as measured by a cloze procedure and final biology grades.

C. Hunter (Note 1) has developed and described courses concerned with reading and vocabulary development, study skills, and library techniques in the law and business content areas. Berry (1976) has described a remedial course in college biology in the Journal of College Science Teaching. He has presented major topics in the remedial course, modules he used, and his method of student

evaluation. Mayfield (Note 2) teaches a course at Brigham Young University in how to read in the field of law. He described the program to the Western College Reading Association in 1978. He has also compiled the results of a survey of college learning centers and listed more than half of 33 colleges and universities which offered reading and study skills assistance offered support or content reading courses.

The trend in higher education is toward offering underprepared students not just reading and writing skills, but basic content concepts and content area reading skills and instruction. The courses meet a need of many underprepared students, but an examination of the effects of a particular program at a particular institution cannot be totally generalized to other populations. Particular programs may be testing specific sets of materials and activities and not the concept of content study skills instruction. To evaluate the concept itself, support class staff must have developed a rapport with the students. Skills must have been presented definitively and readily incorporated into student study strategies. There must have existed close communication between the content professors and support class instructors fostering integration of the two courses (Tomlinson and Tomlinson, 1975).

In addition to further development of such courses, continued evaluation is necessary to identify which factors most affect achievement.

Recommendations for Further Consideration

The importance of basic skills programs has been increased by a defined population of students whose weak academic abilities require a core of fundamental courses. Questions being asked include: Can an effective universal educational approach be identified? What is being learned from the failures of programs? What is the future outlook for basic skills at the college level? (Grant and Hoeber, (1978). Researchers are addressing these questions and educators are concerned with methods which will improve skills programs and with the need for additional data.

Grant and Hoeber concluded their report with the assertion that the search for an inclusive program or treatment has been unsuccessful. They maintained that the underprepared student does need to experience a sense of mastery which can be achieved when given, clear, attainable goals, and by meeting those goals one by one. Individualized, self paced learning is a significant element of remedial programs. Behavioral theory, when applied to

skills programs, has important implications for program components. Programs must address the cognitive, affective, and behavioral growth of the individual.

Grant and Hoeber suggested other elements which need continued examination and refinement. They are:

1. Clear objectives the student is aware of
2. Ongoing, systematic planning based on feedback
3. Attention to individual strengths and weaknesses, personal approaches to learning, and individual rates of learning
4. Attention to the match of students, instructors, materials, and methods
5. Increased effort to learn under what conditions students transfer learning
6. Faculty development
7. Refinement of diagnostic tools
8. More sophisticated use of research design
9. Comprehensive curricular review and revision

The literature here reviewed leads to several general recommendations. Awareness, study, and research of the education process must be extended as requested by Lonergan (1957). Emphasis of instruction should be toward a preventive posture early in the educational experience,

rather than from a rehabilitating posture (Mulka and Sheerin, 1974). Tinto and Sherman (1974) see a need for the organization of a clearinghouse of research efforts to serve as a center for distributing information concerning successful procedures and for reducing duplication of unsuccessful procedures, for monitoring efforts to test new ideas, and for making available materials and activities for faculty development. Etzioni (1970) suggested nothing short of a massive effort to increase the quality of all levels of education can successfully remediate the current dilemmas of the underprepared student. The final goal of basic skills programs, according to Grant and Hoeber, should be their self destruction on the basis of their being unnecessary. Because such an ideal is unrealistic, the search for effective and efficient educational programs must continue.

Summary

This chapter has reviewed the literature to examine several topics related to the effects of study skills instruction on the academic achievement of underprepared college students.

Considered areas were the history and justification

of basic skills classes in higher education. Definitions and characteristics of the underprepared student were given. Developmental and social factors related to college success were reviewed. Several descriptive and evaluative studies of basic skills courses and programs in the content fields were reported. Future considerations and the need for continued study were discussed.

Chapter III

Design of the Study

The effects of content study skills instruction on academic achievement were examined in this study. The academic performance of two groups on underprepared college freshmen were compared. The experimental group enrolled in a required, non-credit study skills support course at Brockport's Learning Skills Center. The control group was not enrolled in or unsuccessfully participated in the support course. Variables examined in the study were grade achieved in the content course and semester cumulative index.

Learning Skills Center at Brockport

The Learning Skills Center (LSC) operation was authorized by the State University College of New York at Brockport during the fall semester in 1972. One full-time and one part-time instructor serviced the students who voluntarily requested assistance to improve reading and study skills. By the fall of 1973, three full-time and three part-time staff members worked with students who were also seeking help in writing, spelling, and mathematics related areas. That spring the Educational Opportunity Program director regularly advised students

to use the services of the LSC.

In the spring of 1974, the English and Speech Departments realized some of their students' need for preparation before taking Freshmen Composition and Freshmen Speech and recognized the services the LSC offered. That summer all entering freshmen participated in a communications skills testing program to identify those students with deficient English related skills. Identified students were required to enroll in and satisfactorily complete basic skills work at the LSC before registering for Freshmen Composition or Freshmen Speech. Students also continued to receive LSC assistance on a self-referral basis. The LSC staff was again increased.

Because of the college administration's acceptance of the communication testing policy, and with the Faculty Senate's recommendation, identified students were first mandated to attend LSC classes in the fall of 1974. Students scoring below a 147 on the Cooperative English Test Battery of Educational Testing Services enrolled in Learning Skills English, a three hour, non-credit course to improve basic writing skills. They were not permitted to enroll in Freshmen Composition until released from the skills class. This required some students to attend the skills class for more than one semester.

The 1975-76 college year brought additional responsibilities to the LSC. The Speech Department requested an oral communications skills course be implemented at the LSC for students whose test results indicated deficient critical thinking skills.

By the Spring Term 1977, the LSC instructors' concern for the underprepared students' academic difficulties served to initiate the college administration's increased awareness of the need for maximum, comprehensive service to the student. The administration's policy recognizing only the need for preparation before enrolling in a college composition or speech class was considered to be too narrow. Students required to participate in the LSC writing or speech class saw the purpose of their attendance only as a vehicle for "getting into" the required college course. It was questionable that any transfer of improved skills to content course work was being achieved. Furthermore, while underprepared students were not permitted to register for the college composition or speech course, they were often unsuccessfully participating in history, psychology, and other academically demanding courses. It was evident the problems of studying, reading, and writing were operating in many content courses. The policy which barred the underprepared student from a basic composition course

was inconsistent with permitting him to register for a history, psychology, or philosophy course.

The staff recognized that many students needing the LSC assistance could also benefit from a carefully selected freshmen program which would allow for LSC academic monitoring. It was believed such a program was necessary because the liberal arts curriculum, basic to the degree programs at the college, assumed an academic background the LSC clientele did not have. This clientele consisted of underprepared students.

The Underprepared Student

In recent years increasing numbers of underprepared college students have been recruited and accepted by colleges across the country. The segment of society traditionally prohibited from the college experience due to inferior high school credentials or low aptitude test scores is now sitting in college classrooms. Economic, social, and political pressures have brought a new kind of student to college.

College professors often assume a background of information students may not have if they have come to college by access routes other than the traditional high school college entrance program. The lack of effective

study techniques and language arts skills, along with a lack of basic information impedes and sometimes makes impossible the student's success. The student becomes the victim of low freshmen grades and then college failure.

College professors tend to not want the responsibility of teaching the basic skills and background information the traditional student has acquired, but which the underprepared student needs. Although modification in the secondary school program is perhaps the answer, colleges and universities have instituted programs of remedial and developmental instruction to meet the underprepared student's academic weaknesses. The support semester at Brockport is one such program.

Support Semester

In the fall of 1977 the LSC made available a semester program allowing close academic monitoring for underprepared freshmen. The skills deficiencies, as indicated by high school credentials and the communications skills testing program, were recognized as being severe enough to cause the student to be unsuccessful in many content classes. The history and psychology departments were particularly concerned with student performance and professors agreed to let the LSC staff work with their under-

prepared students. Professors reserved seats for students who also could participate in the support courses (DVC 095 - Support Psychology or DVC 096 - Support History) at the LSC. The students were also required toenroll in DVC 094 - Communications. This was the same writing course available to LSC students previous semesters. The underprepared students who participated in the support classes were the subjects of this investigation.

A projection formula devised by Dudley (Note 3) for Total English scores (TEN) from the Cooperative English Test Battery (CETB) and for the Total Speech scores (TSP) from the Watson-Glaser Critical Analysis Test was applied to the data of high school credentials of incoming freshmen. When applied to high school credentials, the formula determined the score a student was likely to earn on the respective tests. Selection of students eligible for support semester placement was based on the TEN and TSP scores as follows:

	TEN	TSP
Maximum support	up to 145	up to 52
Moderate support	146-149	
Minimum support	150-154	

For those incoming freshmen who did not take the Scholastic Aptitude Test or Regents Scholarship Exam, and

so lacked the scores necessary to apply the projection formula, the CETB and Watson-Glaser Critical Analysis Test were administered. All students whose projected TEN score was below 150 or whose projected TSP score was below 53 took the necessary test to help determine placement and areas of weakness. The Speech Department still requested that students scoring below a TSP of 53 and not designated as a support semester student be blocked from Freshmen Speech and enroll in the LSC speech class.

Students identified as requiring minimum support received a letter advising that their study skills may require attention and that assistance was available at the LSC. Students identified as requiring moderate support were to enroll in a supported history or psychology course and also attend the companion DVC 095 or DVC 096 study skills support class at the LSC. Maximum support designation required the student to enroll in the supported history or psychology course and the companion study skills class and also enroll in the DVC 094 Communication class, previously the LSC writing class. All students eligible for maximum or moderate support semesters completed the rest of their program only by advisement.

Although grade credit was not assigned to the support classes, students received fee-credit. A student who

enrolled in two DVC courses and the companion credit course and one additional credit course was considered a full time student. He was a full time student carrying twelv hours. However, only six credit hours counted toward graduation.

Design

The academic performance of two groups of underprepared freshmen was compared. For the purposes of the study, underprepared students are those who scored at or below a composite scaled score of 148 on the CETB.

Groups

The experimental group of underprepared freshmen consisted of 40 psychology and history students who received an "S" (satisfactory) grade in their required psychology or history study skills support class at the LSC. A composite scaled score of 147 or less required each of these students to attend the support class.

The control group of underprepared freshmen consisted of a like number of history and psychology students who received a "U" (unsatisfactory) grade in the support class or who did not enroll in the support class. Although a composite scaled score of 148 or less required these students to attend the LSC, they either deliberately evaded the requirement or were not aware of it. Statistical

analysis of a 148 score demonstrates that an individual scoring 148 does not differ significantly from an individual scoring 147 on the CETB and that these individuals do not differ significantly in any standard indexes of college admissions criteria (Dudley, 1978). The experimental and control groups may be considered matched on the usual admissions criteria.

Treatment

The experimental group enrolled in two required courses at the LSC: a three hour, non-credit study skills course (DVC 095 or DVC 096) to support their history or psychology course, and a three hour, non-credit developmental writing course. Because the writing instruction has been required of many Brockport students in previous semesters, its effects are not of present concern in this investigation.

The LSC staff members attended the cooperating professors' classes throughout the semester. One World History Before 1500 course, one U.S. History Before 1877 course, and the Introduction to Psychology course were supported. Four Brockport professors were involved.

It was necessary to create six study skills support sections instructed by five LSC staff members. Each staff member had been employed at the LSC for at least one year previous to the implementation of the support

program. Classes were small with an average of 10 students per section. Instruction was given in lecture listening and note-taking, textbook reading and marking, study techniques, essay and objective test-taking, essay writing, concentration and memory techniques, and content vocabulary. A master outline of objectives was devised by the LSC staff members and served as a guide for planning instruction. It is reproduced below.

The student will:

1. Master the vocabulary of the other department course.
2. Learn to use the analytical and critical comprehension skills appropriate to the content.
3. Become capable of discovering the organizational patterns of the author for applying efficient study techniques.
4. Learn the techniques of previewing materials for purpose setting to aid comprehension and recall.
5. Practice the technique of underlining and marginal notation for comprehension and recall.
6. Learn the skills of lecture listening and note-taking for efficient classroom learning.
7. Learn test preparation and test-taking strategies.
8. Be able to successfully use library resources in preparing assignments.

The course content and texts provided instructional materials which were supplemented with LSC materials the instructors found appropriate.

Analysis

The dependent variables examined in this study were grade achieved in the selected content courses and semester cumulative index.

The mean course grade for the experimental group was compared with the mean course grade of the control group. The mean cumulative index for each group was compared.

Summary

The academic performance of an experimental and control group of underprepared college freshmen was compared. Students in each group were enrolled in a three credit hour psychology or history class at Brockport. Staff members at the LSC attended the class lectures, worked with the text books and evaluation procedures, and offered study skills instruction to the experimental group enrolled in the DVC classes. The control group received no such instruction or unsatisfactorily participated at the LSC. Mean course grades and semester cumulative index were compared.

Chapter IV

Analysis of Data

The effectiveness of content study skills instruction on academic performance of underprepared college freshmen was examined in this study. Dependent variables examined were grades earned in selected content courses and semester grade point average.

Findings and Interprepations

Individual grades earned in the Introduction to Psychology, World History Before 1500, or U.S. History Before 1877 course were procured by the researcher and other Learning Skills Center staff members. Letter grades were converted to nemerical values of 4, 3, 2, 1, or 0 for data analysis. Mean grade earned in the content course was found for both the control and experimental groups.

This study first asked if there is a significant difference between content course grades earned by underprepared students who satisfactorily completed a support class and a control group of underprepared students who were unsuccessful in or who did not enroll in the support class. Data were analyzed with a t test

for independent means. The significance level was established at .01.

As shown in Table 1, the control group earnedsignificantly higher grades in the content course than did the experimental group. The control group's mean weighted value of 1.825 is considered a C- on the letter grade scale. The experimental group's mean letter grade is a D+.

Table 1

Grades in Content Course
for Experimental and Control Groups

Content Course Grade	Experimental	Control
A	0	0
B	3	9
C	11	19
D	20	7
E	6	5
Mean Weighted Value	1.275	1.825
t ratio	2.83	

t (78) = 2.64, $p < .01$

At the .01 level of significance with 78 degrees of

freedom 2.64 is necessary for significance. The *t* ratio was determined to be 2.83. Since the calculated ratio was higher than the critical *t* value it is concluded that the mean content grades are significantly different. An inferior mean grade is indicated for the supported experimental group.

It may be considered that the control group differed from the experimental group in a significant way and that they do not represent similar populations. To investigate this possibility the mean Total English (TEN) scores achieved by each group on the Cooperative English Test Battery (CETB) were compared and tested for significance.

The data summarized in Table 2 show no significant difference in TEN scores.

Table 2

Comparison of TEN Scores
for Experimental and Control Groups

	Experimental	Control
Mean	140.2	140.5
t ratio	1.72	

t (71) + 2.00, $p < .05$

At the .05 level of significance with 71 degrees of freedom, 2.00 is necessary for significance. The t ratio was computed at 1.72. Because the t ratio falls below the 2.00 necessary for significance the groups can be considered matched in CETB scores.

It is possible the groups differed in other significant ways. The researcher has not invesitgated the affective characteristics of the two populations. Such personal qualities as initiative, motivation, self concept and self control, teacher-student relationships, and time management have not been accounted for. These inner qualities and behaviors have been shown by research to affect academic achievement. One limitation of the study is that there is no control for these affective factors. The control group might have been superior in these areas and therefore achieved a higher mean course grade.

This study secondly asked if there is a significant difference in semester grade point average (GPA) earned by underprepared students who satisfactorily completed a support class and a control group of similar students who were unsuccessful in or who did not enroll in the support class.

As shown in Table 3 the control group achieved a higher mean GPA than the experimental group for the

semester, but the difference between the two mean GPAs is not significant.

At the .01 level of significance with 78 degrees of freedom 2.64 is necessary for significance. The calculated *t* ratio was 2.37. Since this falls below the necessary 2.64 value, the data show no significant difference in mean GPAs.

Table 3

Differences Between Mean Semester GPAs for Experimental and Control Groups

Content Course Grade	Experimental	Control
Mean GPA	1.85	2.16
t ratio	2.375	

t (78) = 2.64, $p < .01$

Summary

The study was designed to examine the academic achievement of two groups of underprepared college freshmen. Final grade earned in a selected content course and semester GPAs were examined.

The data show a significant difference in mean content course grades earned, with the control group displaying superiority. The control group displayed a higher semester mean GPA than the experimental group, but this difference was not significant.

Chapter V

Conclusions and Implications

The purpose of this study was to examine the concept of study skills instruction and its effects on the academic achievement of underprepared college freshmen.

Conclusions

The study first asked if a significant difference existed between mean course grade received in a content course by underprepared students who satisfactorily completed the required support class and a control group of similar students who were unsuccessful in or who did not enroll in the support class. Results of a *t* test indicated that the control group earned a significantly superior mean grade. On a letter scale the control group's mean grade was a C- while the experimental group's mean grade was a D+.

Because further analysis revealed the groups were matched on Cooperative English Test Battery scores, it appeared that other significant differences existed between the two groups. There was no control for affective factors which do affect academic success. The control group may have been superior in those

unmeasured areas and therefore achieved a higher mean course grade.

Secondly, this study asked if there is a significant difference in mean semester grade point average (GPA) earned by the experimental and control groups. Mean GPAs for each group were determined and no significant difference was found.

It should be considered that the findings may have been affected by the difficulties of educational evaluation documented in Chapter II. The results may be viewed in relation to students' individual rates of learning and previous experience in the content area studied. Furthermore, one semester of remediation cannot be expected to accommodate the needs of all students. Successful academic achievement was reflected by the high grades attained in the content course by some of the support students. Because all experimental subjects received satisfactory grades in the support course, transfer of learning may have been an influencing factor. Finally, it is difficult to synthesize results of final grades and GPAs to present a summary noting the success of the support course. Tinto and Sherman (1974) suggested that cognitive gains may be imperceptible, while changes in motivation, attitudes, and

values may be more important and more difficult to measure.

Implications for Educational Practice

Educator Benjamin Bloom (1971) stated that 95% of college students are intellectually able to learn the subject matter basic to the core of a college curriculum to a high level of mastery if given the required learning time and appropriate instruction. The futility of remediation for underprepared students applies especially to short term remedial courses (Evans and Dubois, 1972). It is unrealistic to expect the effects of twelve years of previous ineffective teaching, inadequate resources, and the negative attitudes which have affected the underprepared student's educational experience to be removed in one semester or less. Carroll (1971) concluded from a review of several research studies that the lower 5% of students may take five times as long to master a concept as the top 5% of students. The implication is that remedial program design must attend to individual approaches to learning and rates of growth. Self-paced learning should be a significant element of remedial programs.

Skills training must be integrated into the total college learning experience of the underprepared student. Methods must be designed whereby the skills learned in

a remedial program will be transferred to the science or social studies classroom or to the English term paper. Skills must be readily assimilated into the student's study strategies. Several content study skills programs appear to be stimulating this transfer, particularly when cooperation exists between content professors and skills instructors. Further development of such courses is recommended.

Exposure to remedial courses may not be helpful if nothing is known about the personality, motivation, interpersonal relationships, and lifestyle of the student. Program staff must consider the cognitive, affective, and behavioral growth of the individual. Because it is apparent that very able students, who demonstrate all the necessary cognitive skills, sometimes fail in their chosen fields, instructors must recognize that achievement is not only cognitive. Developmental theories of Piaget and Maslow hold important implications for skills programs.

The success of a program depends much on the faculty involved. Fantini and Weinstein (1968) have asserted that no teachers without special skills and training can work effectively with the disadvantaged student. Staff should be chosen for their interest and commitment, knowledge, and skill in working with the learning difficulties

of the underprepared student. Plans for faculty development must be implemented into remedial program design. Pre-service and in-service training should be conducted.

Finally, consideration should be given to how to best determine a program's achievements. In view of the inconsistent results of remedial programs using GPAs as indicators of effectiveness, it seems other evaluative measures must be used. In evaluating programs several questions posed by Piaget (1964) and included in Campbell's Piaget Sampler (1976) should be asked. Is the learning lasting? How much generalization to other areas is evidenced? In each learning experience, what was the student's operational level before the learning, and what new level was achieved? What are the conditions which did contribute to the new learning?

Implications for Research

The findings suggest that additional research be done to determine which factors contribute to academic achievement and that evaluative instruments sensitive enough to measure results be developed. Refinement of diagnostic instruments must be undertaken. More sensitive research designs must be implemented and studies must be adequately controlled for. More longitudinal studies must be funded. There is a need to identify the process by

which the skills learned in remedial programs are transferred to regular course work, as well as to learn how long students retain these skills. Continued evaluation of content study skills instruction is required to learn whether the concept of content area skills instruction is truly effective and whether the positive results of studies available can be generalized to other college populations.

Summary

Higher education is provided in relation to the assumed success of previous schooling. This assumption creates a conflict between the expectations of higher education and the needs of many post-secondary students. Kendrick and Thomas (1970) have concluded that American higher education has been historically heterogeneous but designed for a select population. Higher education needs to offer useful experience to students who are not prepared for college demands and who lack the academic abilities and backgrounds of the traditional student. The educational system must be reconstructed to accommodate this new population of college students. Alternatives to the traditional college curricula must be further made; alternatives that will strengthen the contribution of individual underprepared students.

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